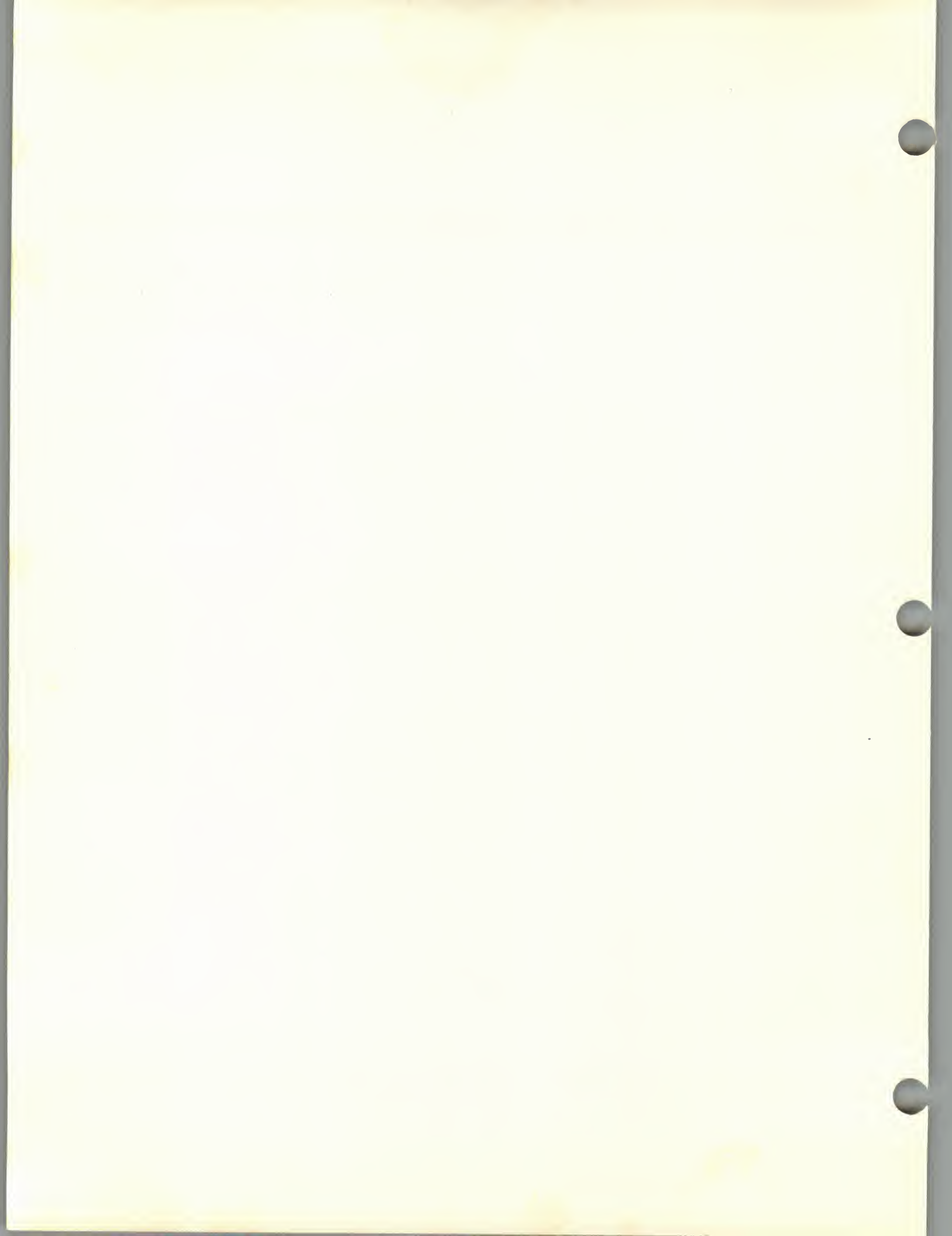




Radon

ISP-80 Disk Controller Installation Procedures for the Sun 56-Inch Data Center Cabinet







ISP-80 Disk Controller Installation Procedures for the Sun 56-Inch Data Center Cabinet

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Inspection and Unpacking

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Inspection and Unpacking

1.1. Inspection

When you receive your shipment, inspect all shipping cartons *immediately* for any evidence of damage. If any carton is severely damaged, request that the carrier's agent be present when the carton is opened. If the carrier's agent is not present when a carton is opened, and the contents are found to be damaged, keep all contents and packing materials for the agent's inspection.

1.2. Unpacking

All materials are packed between protective foam layers inside one box. Open the box and remove the board, cables, and documentation.

Do not remove the board from the anti-static bag yet. Before removing the board from the anti-static bag, read the **Cautions** in Section 2.2.

1.3. Other Documentation You Will Need

Other documentation that you may find helpful or necessary includes the following:

- *Cardcage Slot Assignments and Backplane Configuration Procedures*
Sun P/N 813-2004-xx
- *SPARCServer 390 Cardcage Slot Assignments and Backplane Configuration Procedures*
Sun P/N 813-2067-xx
- *ISP-80 Disk Controller Configuration Procedures*
Sun P/N 813-2065-xx
- *IPI8-1000 1 Gigabyte Disk Drive Configuration Procedures*
Sun P/N 813-2066-xx
- *Installing the SunOS™*
Sun P/N 800-1732-xx
- *System Administration and Networking Manual*
Sun P/N 800-1733-xx
- *Sun 56-Inch Data Center Cabinet and Data Center Expansion Cabinet Installation Manual*
Sun P/N 800-3242-xx
- *Sun 56-Inch Data Center Cabinet and Data Center Expansion Cabinet Field Service Manual*

Sun P/N 800-3259-xx

- *16-Slot Logic Enclosure Field Service Manual*
Sun P/N 800-3265-xx
- *16-Slot Logic Enclosure Installation Manual*
Sun P/N 800-3264-xx

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General Description and Cautions

2.1. General Description

The ISP-80 Disk Controller is a high-performance disk drive controller that has a maximum Direct Memory Access (DMA) transfer rate of 16.0 megabytes per second. This disk controller supports overlapped seeks, multiple drive types, disk transfer rates of up to 6 megabytes per second, and a *maximum* of eight IP18-1000 disk drives per controller.

The ISP-80 Disk Controller communicates with Sun equipment via the VME bus in the Sun Logic Enclosure.

The ISP-80 Disk Controller is supported by Sun software release 4.0.3 and the SPARC 4/390 Feature Tape. Previous software releases are not compatible with this disk controller. Future software release will include the contents of this feature tape.

2.2. Important Cautions during Installation

General Caution

To reduce the risk of electrical shock and/or fire hazard and/or damage to the system, refer all servicing to qualified service personnel.

Power Off Caution

Turn off the power at the power sequencer for the logic enclosure before inserting or removing any boards. Disconnect the power cord. Connect a grounding strap to the logic enclosure, as disconnecting the power cord leaves the logic enclosure ungrounded. To do this, connect a grounding wire or strap between the logic enclosure and a good earth ground.

Electrostatic Discharge Caution

Electrostatic Discharge Caution — Some of the devices on Sun boards are very sensitive to electrostatic discharge (they can be permanently damaged). An electrostatic charge can build up in the human body and then discharge when you touch the board.

Before handling any board, make sure that you are wearing a properly connected grounding wrist strap or that you have placed your hand on a conductive surface that is grounded to a common earth ground, (such as the metal screws on an AC receptacle cover). This discharges any static electricity present in your body.

Springfinger Caution

Springfinger Caution — Springfingers are metal strips that are installed between the edge of the PC board and the outer panel to reduce RFI emissions. Serrated metal “fingers” protrude from either side of the strip.

If a board **WITH** springfingers is installed next to a board **WITHOUT** springfingers, the insulator shield on the outside of the fingers **MUST** be present to prevent possible shorting of component leads to the springfingers.

Installation of a board **WITHOUT** springfingers may affect RFI emissions and may therefore affect FCC compliance. Sun will no longer be responsible for FCC compliance if non-springfingered boards are added to a system originally shipped **WITH** springfingers and FCC approval.

If a logic enclosure contains boards both **WITH** and **WITHOUT** springfingers, use the following guidelines:

- Before removing a board **WITHOUT** springfingers, remove the board below (or to the left) it if that board is equipped **WITH** springfingers and an outer insulator shield.
- Replace any filler panel equipped **WITH** springfingers by pulling out the air restrictor panel far enough to allow the springfingers to lay against the panel. Push both units into place simultaneously and secure with the 2.5mm Allen-head screws. This procedure makes replacement of the filler panels easier, and reduces the chance of damage to the springfingers.
- Always install a board **WITHOUT** springfingers first, and then replace the board **WITH** springfingers and insulator shield in the slot below it (or to the left).

If a board **WITH** springfingers is installed next to a board or filler panel also equipped **WITH** springfingers, the outside insulator shields should be removed.

Ensure that the insulator strip between the inner side of the springfingers and the PC board is in place and intact at all times.

When removing and replacing boards with springfingers, check the condition of the insulator strip/shield(s) and replace if damaged.

Please refer all servicing questions or concerns not described in this document to your local Sun Microsystems sales or field service office.

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Board Location and Installation/Removal Instructions

NOTE *If you received your IPI Disk Controller Board, disk drive(s) and the system logic enclosure preinstalled in a Sun 56-inch Data Center Cabinet, you may skip to Chapter 4.*

3.1. Tools Required

The following tools will be needed to install the ISP-80 Disk Controller Board:

- Set of metric hexagonal (Allen) wrenches, including 2.5mm (or 5/64" SAE).
- Phillips screwdrivers #1 and #2.
- Standard blade screwdriver.

3.2. Board Location

For information about logic enclosure backplane jumpering and where to install your disk controller board in your Sun system, refer to the appropriate cardcage slot assignment manual.

3.3. Board Installation Graceful Power-Down

If you want to add or replace an ISP-80 controller board, you must first power down the system. (Refer to the "power-off" caution, in Section 2.2 for details).

If the system is running and you want to power down the drive(s) before adding or replacing an ISP-80 controller board, ensure that the system administrator first performs the following steps.

1. Back up the system files and data onto tape, so these files and data can be restored later.
2. Warn clients and other workstation users to log out.
3. As superuser, enter either (not both) of the following two commands:

```
/etc/halt  
- or -  
/etc/fasthalt
```

These commands call a program that ensure that all data in the buffers is written to a disk before the operating system is halted.

When the operating system is halted, a message notifying you of this is displayed on the monitor, followed by the boot monitor prompt (>).

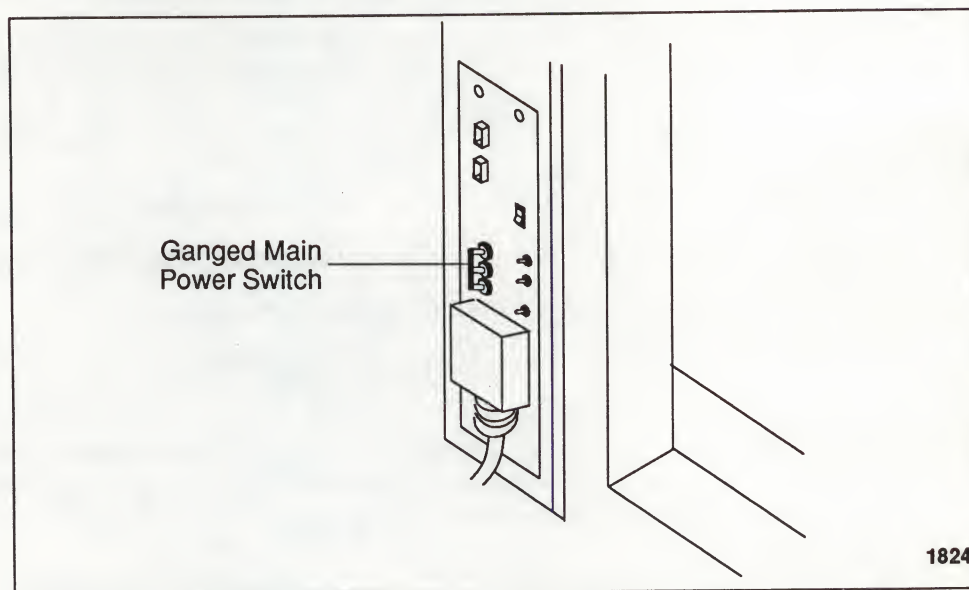
You may now turn the system power off.

Installation

CAUTION To reduce the risk of electrical shock and/or fire hazard and/or damage to the system, refer all servicing to qualified service personnel.

1. Be sure that the system power is turned off at the power sequencer. (Refer to Figure 3-1, below.)

Figure 3-1 *Power Sequencer Ganged Main Power Switch*



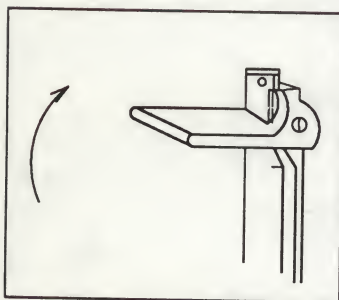
2. **Before handling any board**, make sure that you are wearing a properly connected grounding wrist strap or that you have placed your hand on a conductive surface that is grounded to a common earth ground, (such as the metal screws on an AC receptacle cover). This will discharge the static electricity present in your body.

Remove the ISP-80 controller board from the anti-static bag. Some of the devices on Sun boards are very sensitive to electrostatic discharge (they can be permanently damaged). An electrostatic charge can build up in the human body and then discharge when you touch the board.

3. Refer to the *ISP-80 Disk Controller Configuration Procedures* (Sun P/N 813-2066-xx) and verify that the jumper and switch settings are set to the correct positions for your application.
4. If you have not already done so, refer to the appropriate cardcage slot assignment manual to choose the target slot in the logic enclosure cardcage, and perform the backplane configuration procedure.

5. Using the 2.5mm (or 5/64" SAE) hexagonal wrench, remove the filler panel on the rear of the cardcage covering the target slot. (Save these screws.) Remove the air restrictor also.
6. Insert the disk controller board into the the cardcage so that the component side faces towards the right. (This is the same orientation as all the other boards in the cardcage.) The board should slide into the cardcage slot with little resistance and should fit snugly when plugged into the backplane connectors. Only a moderate amount of force is required to seat the board. If you have to use an excessive amount of force, check the cardcage slot for any obvious obstructions. Also, check both the board and the backplane for damage (bent connector pins, etc.).
7. Using the hex head screws removed in step 5, secure the board to the card cage.
8. Connect the board to the drives as outlined in the Drive Install manual.
9. Power the system back up.
10. Observe the diagnostic LEDs. They should settle into a scanning pattern with one LED on at a time, scanning down from the top. During initialization, this pattern may stop for a few seconds at a time. If after 20 or 30 seconds the scanning pattern doesn't occur, record the LED activity and contact your local Sun service center.

3.4. Board Removal



Extraction Lever

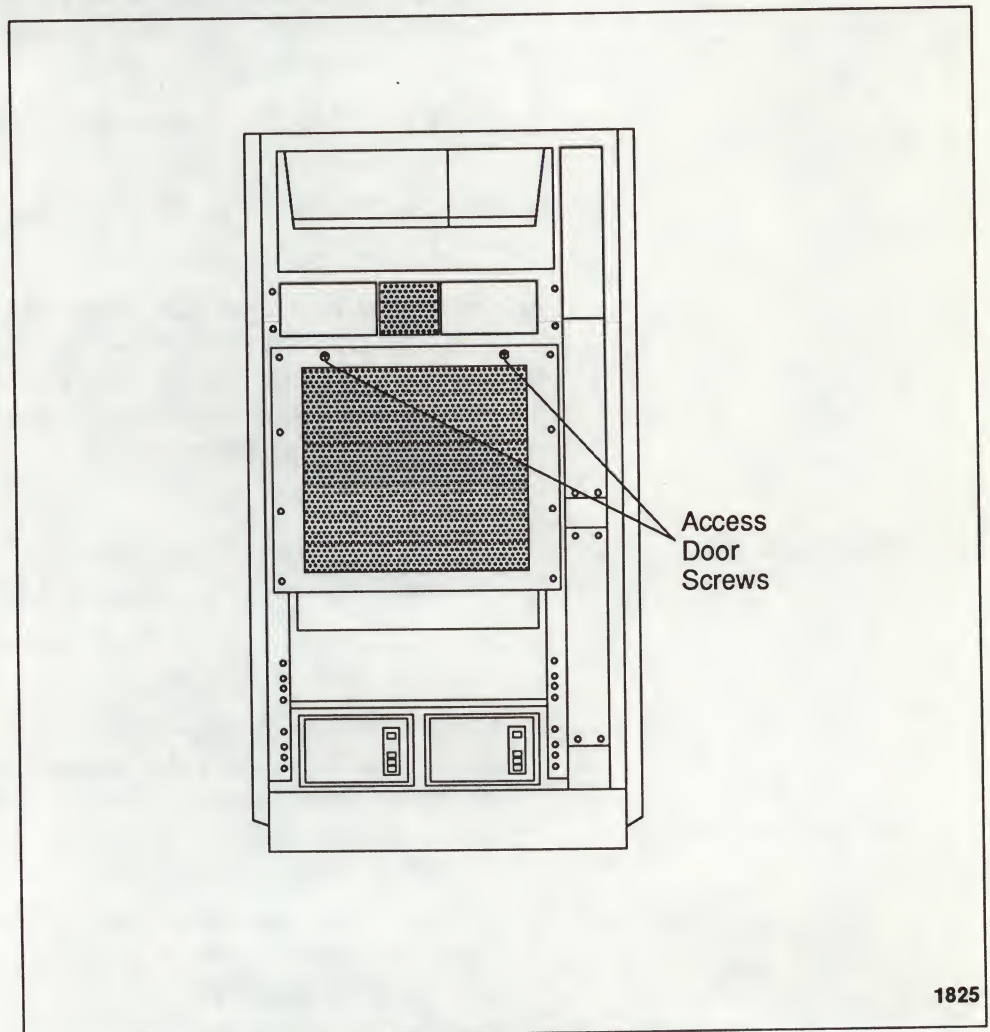
1. Power down the system as described, etc. and unplug the power cord from the system logic enclosure as described in the previous section.
2. Using the 2.5mm hexagonal wrench, remove the hex-head screws which secure the board to the cardcage.
3. Before attempting to remove the board, check the cardcage slot for obvious obstructions (cables, etc.). Locate the PC board extraction levers (located at the top and bottom rear edge of the board assembly). Press these levers outward, away from the center of the board. This should unplug the board from the backplane connectors and back it out of the cardcage about 1/4 inch.
4. Pull out on the board assembly until it is free of the logic enclosure (cardcage). (Remember to heed the Electrostatic Discharge Caution when handling the board assembly.)
5. Place the removed board inside the antistatic bag in which it was originally packaged.
6. Perform the backplane configuration procedure.
7. If desired, reinstall a filler panel on the rear of the cardcage. Secure it with the hex-head screws removed in step 2.

3.5. Checking Jumper Configuration on the Backplane

1. Power down the system and unplug the power cord from the system's logic enclosure.
2. Gain access to the solder side of the cardcage backplane in order to check the backplane jumpers. (Usually there is a door or a back panel that allows access to the backplane.)

Unsnap the bezel and remove the 3 screws that secure the RFI shield.

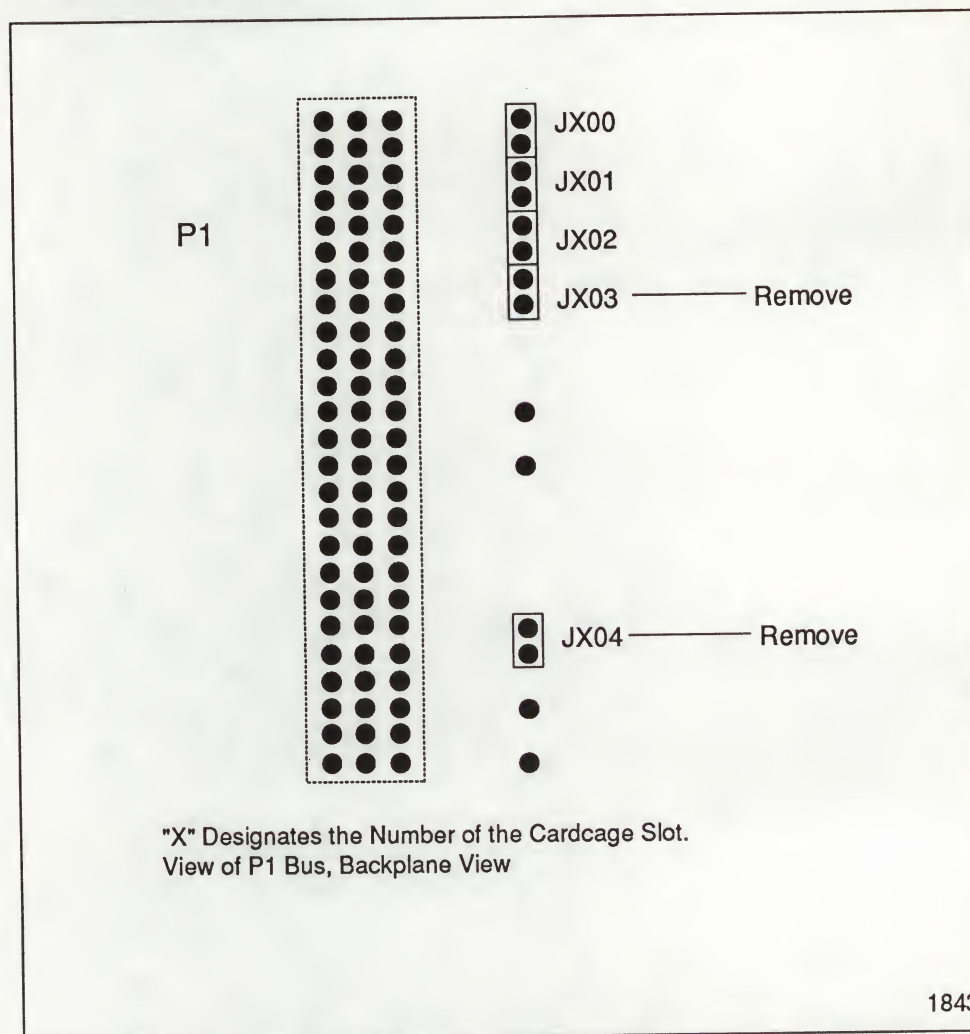
Figure 3-2 *Backplane Access Door (Front of System)*



3. Ensure that all backplane jumpers are configured as indicated in the appropriate cardcage slot assignment manual. Figure 3-3 is a view of part of the backplane, as seen from the front of the system. It illustrates the locations of backplane jumpers. Note that this illustration is of Slot X (that is, any slot in the Sun cardcage). While the jumper configurations may vary, the location and arrangement of the jumper headers is the same for every slot.

When an ISP-80 Disk Controller is installed in a slot, backplane jumpers JX03 and JX04 must be removed. When a slot is empty, JX03 and JX04 backplane jumpers must be installed. (Refer to Figure 3-3.)

Figure 3-3 Backplane Jumper Locations



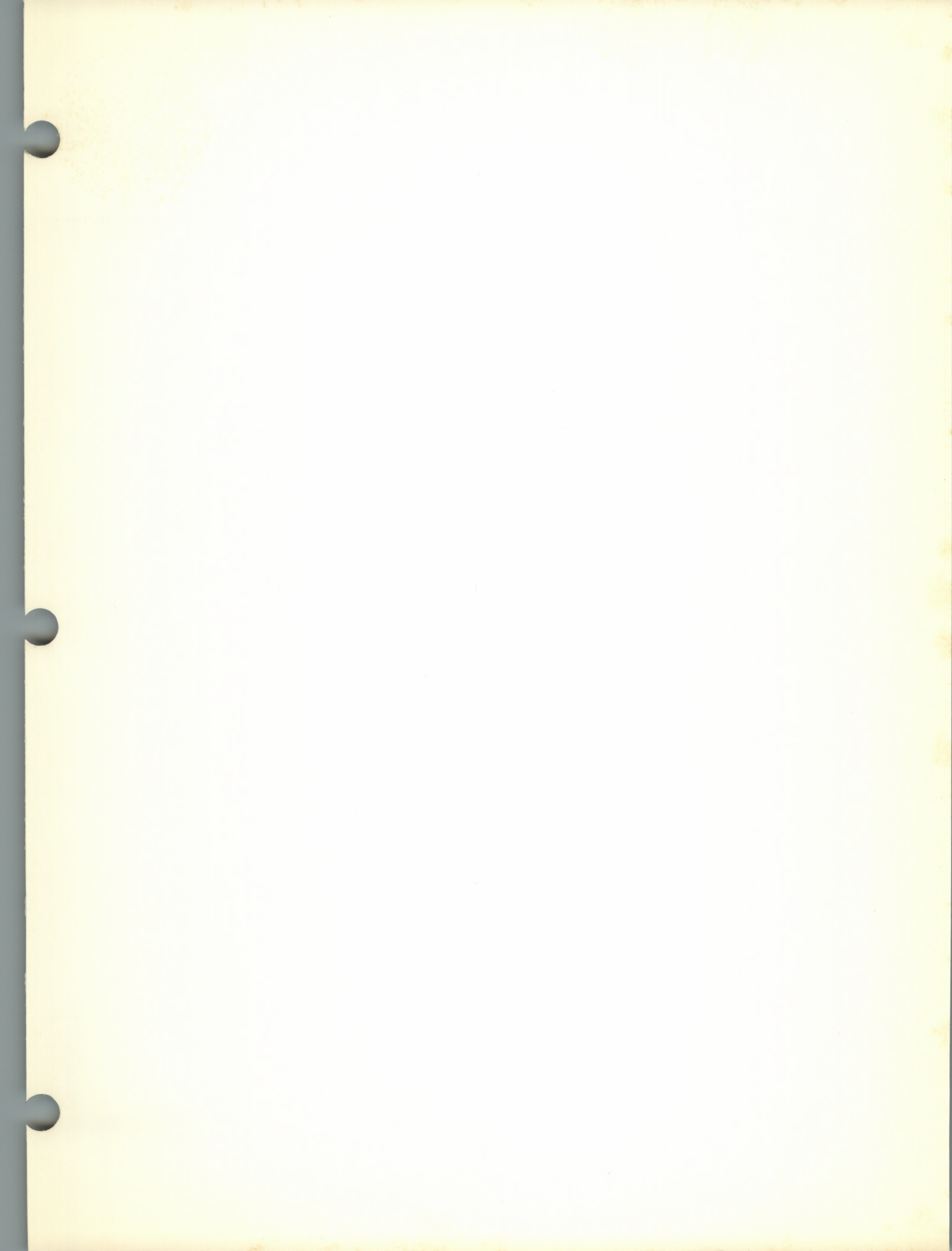
4. After ensuring the backplane jumpers are correct, close up the host system logic enclosure.

3.6. Operating System Configuration

Refer to *Installing the SunOS™* (Sun P/N 800-1732-xx) for information about the changes you will need to make in your operating system.

Revision History

<i>Dash Number</i>	<i>Revision</i>	<i>Date</i>	<i>Comments</i>
01	01	15 February 1989	Review Draft
02	01	27 March 1989	Alpha Review
03	01	17 April 1989	Alpha Review
05	50	9 June 1989	Beta Review
06	50	28 August 1989	Review Draft
10	A	26 September 1989	First Customer Shipment



Corporate Headquarters

Sun Microsystems, Inc.
2550 Garcia Avenue
Mountain View, CA 94043
415 960-1300
TLX 37-29639

For U.S. Sales Office

locations, call:
800 821-4643
In CA: 800 821-4642

European Headquarters

Sun Microsystems Europe, Inc.
Bagshot Manor, Green Lane
Bagshot, Surrey GU19 5NL
England
0276 51440
TLX 859017

Australia: (02) 413 2666

Canada: 416 477-6745

France: (1) 40 94 80 00

Germany: (089) 95094-0

Hong Kong: 852 5-8651688

Italy: (39) 6056337

Japan: (03) 221-7021

Korea: 2-7802255

Nordic Countries: + 46 (0)8 7647810

PRC: 1-8315568

Singapore: 224 3388

Spain: (1) 2532003

Switzerland: (1) 8289555

The Netherlands: 3133501234

Taiwan: 2-7213257

UK: 0276 62111

Europe, Middle East, and Africa,
call European Headquarters:
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Elsewhere in the world,
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Intercontinental Sales

